CLEAR SPRINGS FOODS (PWS 5240007)
SOURCE WATER ASSESSMENT FINAL REPORT

March 26, 2003

State of Idaho
Department of Environmental Quality

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the act. This assessment is based on a land use inventory of the designated assessment area, sensitivity factors associated with the wells, and aquifer characteristics.

This report, *Source Water Assessment for the Clear Springs Foods, Jerome, Idaho* describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The Clear Springs Foods (PWS #5240007) water system is a non-community non-transient system consisting of one spring. The system currently serves 220 people through five connections.

Final susceptibility scores are derived from system construction scores and potential contaminant/land use scores. Therefore, a low rating in one category coupled with a higher rating in another category results in a final rating of low, moderate, or high susceptibility. Potential contaminants are divided into four categories: IOCs, (e.g., nitrates, arsenic), VOCs, (e.g., petroleum products), SOCs, (e.g., pesticides), and microbial contaminants (e.g., bacteria). As different drinking water sources can be subject to various contamination settings, separate scores are given for each type of contaminant.

In terms of total susceptibility, Clear Spring rated high for IOCs, SOCs, and for microbials, and moderate for VOCs. System construction rated high, and land use rated high for IOCs and SOCs, and moderate for VOCs and microbial contaminants. The largest influences upon overall scores were the number of potential contaminants located within the three year time of travel (TOT) zone (Table 1 and Figure 2) and the fact that water destined for the water system's distribution system contacts the atmosphere between the ground and the collection pipe.

No VOCs or SOCs have ever been detected in the spring. Trace amounts of the IOCs chromium, sodium, fluoride, sodium, and nitrate have been detected, but concentrations have been significantly below maximum contaminant levels (MCLs). For example, despite the spring and its delineation existing within a county with high nitrogen fertilizer use, high herbicide use, and high agricultural chemical use, nitrate concentrations have not been detected higher than 2.39 milligrams per liter (mg/L), well below the MCL of 10 mg/L as set by the Environmental Protection Agency (EPA). Repeat detections of total coliform have occurred once (January 1997) in the distribution system.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. If the system should need to expand in the future, new well or spring sites should be located in areas with as few potential sources of contamination as possible, and the site(s) should be reserved and protected for this specific purpose.

For Clear Springs Foods, drinking water protection activities should first focus on maintaining the requirements of the sanitary survey (an inspection conducted every five years with the purpose of determining the physical condition of a water system's components and its capacity). Any spills from the potential contaminant sources listed in Table 1 of this report should be carefully monitored, as should any future development in the delineated area. Other practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water area should be implemented. No chemicals should be stored or applied within the 100-foot radius of the spring. As most of the designated areas are outside the direct jurisdiction of Clear Springs Foods, partnerships with state and local agencies and industry groups should be established and are critical to success.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineation is near urban and residential land use areas. Public education topics could include proper lawn and garden care practices, household hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the U.S. EPA. There are transportation corridors near the delineation, therefore the Department of Transportation should be involved in protection activities. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

A system must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (e.g. zoning, permitting) or non-regulatory in nature (e.g. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Twin Falls Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR THE CLEAR SPRINGS FOODS, TWIN FALLS, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** A map showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings, used to develop this assessment, is also attached.

Level of Accuracy and Purpose of the Assessment

The Idaho Department of Environmental Quality (DEQ) is required by the EPA to assess the over 2,900 public drinking water sources in Idaho for their relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area, sensitivity factors associated with the well(s)/spring(s), and aquifer characteristics. All assessments must be completed by May of 2003. The resources and time available to accomplish assessments are limited. Therefore, an in-depth, site-specific investigation to identify each significant potential source of contamination for every public water system is not possible. **This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The ultimate goal of this assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The DEQ recognizes that pollution prevention activities generally require less time and money to implement than treating a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a drinking water protection program should be determined by the local community based on its own needs and limitations. Drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The Clear Springs Foods (PWS #5240007) water system is a non-community non-transient system consisting of one spring. The system currently serves 220 people through five connections.

No VOCs or SOCs have ever been detected in the spring. Trace amounts of the IOCs chromium, sodium, fluoride, sodium, and nitrate have been detected, but concentrations have been significantly below MCLs. For example, despite the spring and its delineation existing within a county with high nitrogen fertilizer use, high herbicide use, and high agricultural chemical use, nitrate concentrations have not been detected higher than 2.39 mg/L, well below the MCL of 10 mg/L as set by the EPA. Repeat detections of total coliform have occurred once (January 1997) in the distribution system.

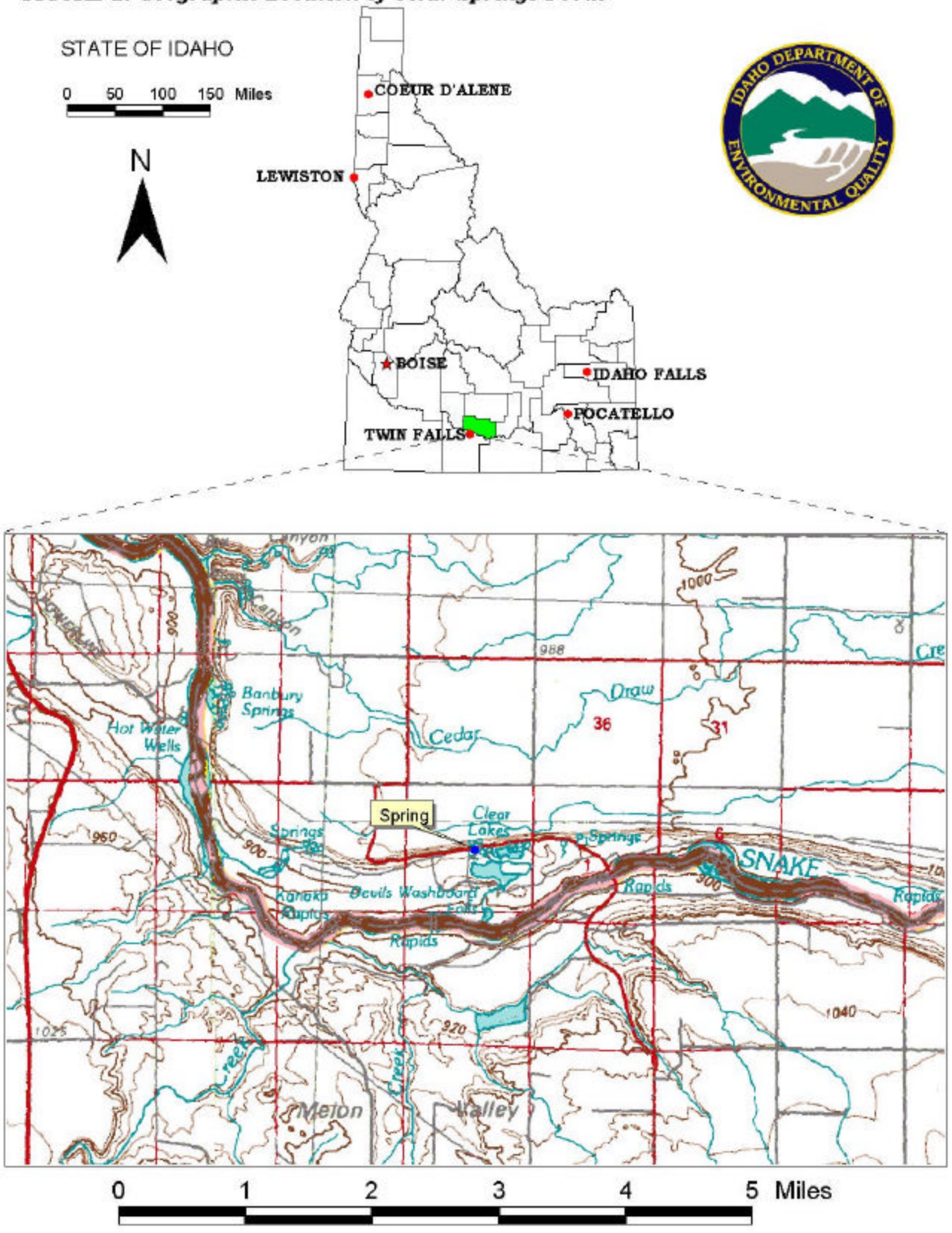
Defining the Zones of Contribution – Delineation

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. Washington Group, International (WGI) used a refined computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) time-of-travel (TOT) zones for water associated with the Southwest Eastern Snake River Plain (SW ESRP) aquifer. The computer model used site-specific data, assimilated by DEQ and WGI from a variety of sources including local area well logs and hydrogeologic reports summarized below.

The ESRP is a northeast trending basin located in southeastern Idaho. The 10,000 square miles of the plain are filled primarily with highly fractured layered Quaternary basalt flows of the Snake River Group, which are intercalated with sedimentary rocks along the margins (Garabedian, 1992, p. 5). Individual basalt flows range from 10 to 50 feet thick, averaging 20 to 25 feet thick (Lindholm, 1996, p. 14). Basalt is thickest in the central part of the eastern plain and thins toward the margins. Whitehead (1992, p. 9) estimates the total thickness of the flows to be as great as 5,000 feet. A thin layer (0 to 100 feet) of windblown and fluvial sediments overlies the basalt.

The layered basalts of the Snake River Group host one of the most productive aquifers in the United States. The aquifer is generally considered unconfined, yet may be confined locally because of interbedded clay and dense unfractured basalt (Whitehead, 1992, p. 26). Whitehead (1992, p. 22) reports that well yields of 2,000 to 3,000 gal/min are common for wells open to less than 100 feet of the aquifer. Lindholm (1996, p. 18) estimates aquifer thickness to range from 100 feet near the plain's margin to thousands of feet near the center. Models of the regional aquifer have used values ranging from 200 to 3,000 feet to represent aquifer thickness (Cosgrove et al., 1999, p. 15).

FIGURE 1. Geographic Location of Clear Springs Foods



Regional ground-water flow is to the southwest paralleling the basin (Cosgrove et al., 1999; deSonneville, 1972, p. 78; Garabedian, 1992, p. 48; and Lindholm, 1996, p. 23). Reported water table gradients range from 3 to 100 ft/mile and average 12 ft/mile (Lindholm, 1996, p. 22). Gradients steepen at the plain's margin and at discharge locations.

The majority of aquifer recharge results from surface water irrigation activities (incidental recharge), which divert water from the Snake River and its tributaries (Ackerman, 1995, p. 4, and Garabedian, 1992, p. 11). Natural recharge occurs through stream losses, direct precipitation, and tributary basin underflow.

The Southwest Margin of the ESRP hydrologic province is the regional aquifer's primary discharge area. Interpretation of well logs indicates that a 1- to 23-foot-thick layer of sediment overlies the fractured basalt aquifer in Jerome County, and that an 8- to 410-foot-thick layer of sediment overlies the same aquifer in southern Minidoka and Power Counties. Published geologic maps of the Snake River Plain (Whitehead 1992, Plates 1 and 5) indicate there is 100 to 500 feet of Quaternary to Tertiary Basalt aged compacted to poorly consolidated sediments located in the Heyburn area (north of the Snake River near Burley). The saturated thickness of the regional basalt aquifer for the Southwest Margin is estimated to range from less than 500 feet near the Snake River to 1,500 feet near Minidoka.

A published water table map of the Kimberly to Bliss region of the aquifer (Moreland, 1976, p. 5) indicates that the ground-water flow direction in the Southwest Margin is similar to that depicted at the regional scale (e.g., Garabedian, 1992, Plate 4).

Annual average precipitation for the period 1951 to 1980 is 9.6 inches in both Twin Falls and Burley (Kjelstrom, 1995, p. 3). The estimated recharge from precipitation in the Southwest Margin ranges from less than 0.5 inch to more than 2 in./yr (Garabedian, 1992, p. 20). Kjelstrom (1995, p. 13) reports an annual river loss of 110,000 acre-feet to the aquifer for the 34.8-mile Minidoka-to-Milner reach of the Snake River. River gains of 210,000 acre-feet for the 21.5-mile Milner-to-Kimberly reach, and 880,000 acre-feet for the 20.4-mile Kimberly-to-Buhl reach are reported for the same period.

The delineated source water assessment area for the Clear Springs Foods can best be described as a triangular area originating at the wellhead and extending approximately 53 miles eastward and widening to 16 miles at it's most eastward end (Figure 2). The actual data used by WGI in determining the source water assessment delineation area is available from DEQ upon request.

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and the Wayside Estates and from available databases.

The dominant land within the Clear Springs Foods delineated area is irrigated agriculture within the zero to three year TOT zone (figure 2), and rangeland/basalt throughout the rest of the delineation. It is important to understand that a release may never occur from a potential source of contamination provided best management practices are used at the facility. Many potential sources of contamination are regulated at the federal level, state level, or both, to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, such as educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

Contaminant Source Inventory Process

A contaminant inventory of the study area was conducted in November and December of 2002. This involved identifying and documenting potential contaminant sources within the Clear Springs Foods Source Water Assessment Areas through the use of computer databases and Geographic Information System maps developed by DEQ.

The delineation of the spring has 219 potential point sources (See Table 1, Figure 2). These potential contaminant sources include Underground Storage Tanks (UST), Leaking Underground Storage Tanks (LUST), Comprehensive Environmental Response Compensation and Liability Act (CERCLA) sites, Superfund Amendments and Reauthorization Act (SARA) sites, mines, a landfill, dairies, a waste land application site (WLAP), and deep injection wells. Additionally, Highway 25, 79, and 93, and Interstate 84, Union Pacific Railroad cross the delineation. If an accidental spill occurred in one of these sources, IOCs, VOCs, SOCs, or microbial contaminants could be added to the aquifer system.

Table 1. Clear Springs Foods, Well #1, Potential Contaminant Inventory

SITE #	Source Description[1]	TOT Zone[2] (years)	Source of Information	Potential Contaminants[3]
1, 9	LUST site; Site Cleanup Completed , Impact: Unknown	3 YR	Database Search	VOC, SOC
2, 20	UST site, LUST siteOther; Closed, Site Cleanup Completed , Impact: Unknown	3 YR	Database Search	VOC, SOC
3, 14, 43	LUST site, UST site; Commercial; Closed; Site Cleanup Completed , Impact: Unknown	3 YR	Database Search	VOC, SOC
4, 18	LUST site, UST site; Gas Station; Closed;Site Cleanup Completed , Impact: Unknown	3 YR	Database Search	VOC, SOC
5	LUST site; Site Cleanup Completed , Impact: Unknown	3 YR	Database Search	VOC, SOC
7	LUST site; Site Cleanup Completed , Impact: Unknown	3 YR	Database Search	VOC, SOC
6, 26	LUST site, UST siteSite Cleanup Completed , Impact: Unknown	3 YR	Database Search	VOC, SOC
8, 121	LUST siteGasoline-Wholesale; Site Cleanup Completed , Impact: Unknown	3 YR	Database Search	VOC, SOC
10, 38	LUST site, UST site; Site Cleanup Completed , Impact: Unknown	3 YR	Database Search	VOC, SOC
11, 39	LUST site, UST siteSite Cleanup Completed , Impact: Unknown	3 YR	Database Search	VOC, SOC

SITE #	Source Description[1]	TOT Zone[2] (years)	Source of Information	Potential Contaminants[3]
12, 40	LUST site, UST siteSite Cleanup Completed , Impact: Unknown	3 YR	Database Search	VOC, SOC
13, 41	LUST site, UST site; Gas Station; Open; Site Cleanup Completed , Impact: Unknown	3 YR	Database Search	VOC, SOC
15, 44	LUST site, UST site; Gas Station; Closed; Site Cleanup Completed , Impact: Unknown	3 YR	Database Search	VOC, SOC
16	LUST site; Site Cleanup Completed , Impact: Unknown	3 YR	Database Search	VOC, SOC
17	LUST site; Site Cleanup Completed , Impact: Unknown	3 YR	Database Search	VOC, SOC
19	UST site; Gas Station; Open	3 YR	Database Search	VOC, SOC
21	UST site; Other; Closed	3 YR	Database Search	VOC, SOC
22	UST site; Gas Station; Open	3 YR	Database Search	VOC, SOC
23	UST site; Gas Station; Open	3 YR	Database Search	VOC, SOC
24, 110	Trucking-Motor Freight; UST site;Not Listed; Closed	3 YR	Database Search	VOC, SOC
25	UST site; State Government; Open	3 YR	Database Search	VOC, SOC
27	UST site; State Government; Closed	3 YR	Database Search	VOC, SOC
28, 196, 221	UST site, CERCLA site, SARA site; Local Government; Closed	3 YR	Database Search	IOC, VOC, SOC
29, 216	UST site, SARA site; Gas Station; Open	3 YR	Database Search	VOC, SOC
31, 217	UST site, SARA site; Not Listed; Open	3 YR	Database Search	IOC, VOC, SOC
30	UST site; Utilities; Closed	3 YR	Database Search	VOC, SOC
32	UST site; Not Listed; Open	3 YR	Database Search	VOC, SOC
33	UST site; Aircraft Owner; Closed	3 YR	Database Search	VOC, SOC
34	UST site; Gas Station; Closed	3 YR	Database Search	VOC, SOC
35	UST site; Other; Open	3 YR	Database Search	VOC, SOC
36	UST site; Other; Closed	3 YR	Database Search	VOC, SOC
37	UST site; Gas Station; Open	3 YR	Database Search	VOC, SOC
42	UST site; Gas Station; Closed	3 YR	Database Search	VOC, SOC
45	UST site; Gas Station; Open	3 YR	Database Search	VOC, SOC
46	UST site; Local Government; Closed	3 YR	Database Search	VOC, SOC
47	UST site; Local Government; Closed	3 YR	Database Search	VOC, SOC
48	UST site; Local Government; Closed	3 YR	Database Search	VOC, SOC
49	UST site; Commercial; Open	3 YR	Database Search	VOC, SOC
50	Dairy; <=200 cows	3 YR	Database Search	IOC, Microbials
51, 103	Dairy; 751-1000 cows	3 YR	Database Search	IOC, Microbials
52	Dairy; 201-500 cows	3 YR	Database Search	IOC, Microbials
53	Dairy; 1001-2000 cows	3 YR	Database Search	IOC, Microbials
54	Dairy; 201-500 cows	3 YR	Database Search	IOC, Microbials
55	Dairy; 201-500 cows	3 YR	Database Search	IOC, Microbials
56	Dairy; 751-1000 cows	3 YR	Database Search	IOC, Microbials
57	Dairy; 501-750 cows	3 YR	Database Search	IOC, Microbials
58	Dairy; <=200 cows	3 YR	Database Search	IOC, Microbials
59	Dairy; 201-500 cows	3 YR	Database Search	IOC, Microbials
60, 145	Dairy; 1001-2000 cows	3 YR	Database Search	IOC, Microbials
61	Dairy; <=200 cows	3 YR	Database Search	IOC, Microbials
62	Dairy; 201-500 cows	3 YR	Database Search	IOC, Microbials
63	Dairy; <=200 cows	3 YR	Database Search	IOC, Microbials
64	Dairy; <=200 cows	3 YR	Database Search	IOC, Microbials
65	Dairy; 501-750 cows	3 YR	Database Search	IOC, Microbials
66	Dairy; 751-1000 cows	3 YR	Database Search	IOC, Microbials

SITE #	Source Description[1]	TOT Zone[2] (years)	Source of Information	Potential Contaminants[3]
67	Dairy; <=200 cows	3 YR	Database Search	IOC, Microbials
68	Dairy; 201-500 cows	3 YR	Database Search	IOC, Microbials
69	Dairy; <=200 cows	3 YR	Database Search	IOC, Microbials
70	Dairy; 201-500 cows	3 YR	Database Search	IOC, Microbials
71	Dairy; 201-500 cows	3 YR	Database Search	IOC, Microbials
72	Dairy; 201-500 cows	3 YR	Database Search	IOC, Microbials
73	Dairy; 1001-2000 cows	3 YR	Database Search	IOC, Microbials
74	Dairy; 501-750 cows	3 YR	Database Search	IOC, Microbials
75	Dairy; 501-750 cows	3 YR	Database Search	IOC, Microbials
76	Dairy; <=200 cows	3 YR	Database Search	IOC, Microbials
77	Dairy; 1001-2000 cows	3 YR	Database Search	IOC, Microbials
78	Dairy; 201-500 cows	3 YR	Database Search	IOC, Microbials
79	Dairy; <=200 cows	3 YR	Database Search	IOC, Microbials
80	Dairy; 1001-2000 cows	3 YR	Database Search	IOC, Microbials
81	General Contractors	3 YR	Database Search	VOCIOC, SOC
82	Electric Motors-Dlrs/Repairing	3 YR	Database Search	IOC, VOC, SOC
83	Farming Service	3 YR	Database Search	IOC, VOC, SOC, Microbials
84	Livestock Breeders	3 YR	Database Search	IOC, Microbials
85	Veterinarians	3 YR	Database Search	IOC, VOC, SOC, Microbials
86	Photographers-Portrait	3 YR	Database Search	IOC, VOC
87	Animal Health Products	3 YR	Database Search	IOC, SOC, Microbials
88	Livestock Buyers	3 YR	Database Search	IOC, Microbials
89	Plumbing Drain & Sewer Cleaning	3 YR	Database Search	IOC, VOC, SOC
90	Oils-Lubricating-Wholesale	3 YR	Database Search	VOC, SOC
91	Signs (Manufacturers)	3 YR	Database Search	IOC, VOC, SOC
92	Septic Tanks-Cleaning & Repairing	3 YR	Database Search	IOC, VOC, SOC, Microbials
93	Wrecker Service	3 YR	Database Search	IOC, VOC, SOC
94	Building Maintenance	3 YR	Database Search	IOC, VOC, SOC
95	Aerial Applicators	3 YR	Database Search	IOC, SOC
96	Automobile Body-Repairing & Painting	3 YR	Database Search	IOC, VOC, SOC
97	Truck-Repairing & Service	3 YR	Database Search	IOC, VOC, SOC
98	Compost (Manufacturers)	3 YR	Database Search	IOC, SOC, Microbials
99	Automobile Renting & Leasing	3 YR	Database Search	VOC, SOC
100	Excavating Contractors	3 YR	Database Search	IOC, VOC, SOC
101	Engines-Rebuilding & Exchanging	3 YR	Database Search	IOC, VOC, SOC
102	Carpet & Rug Cleaners	3 YR	Database Search	IOC, VOC, SOC, Microbials
104	Dairy Products-Wholesale	3 YR	Database Search	IOC, Microbials
105	Welding	3 YR	Database Search	IOC, VOC, SOC
106	Service Stations-Gasoline & Oil	3 YR	Database Search	IOC, VOC, SOC
107	Fire Department	3 YR	Database Search	IOC, VOC, SOC
108	Truck-Repairing & Service	3 YR	Database Search	IOC, VOC, SOC
109	Automobile Dealers-Used Cars	3 YR	Database Search	IOC, VOC, SOC
111	Veterinarians	3 YR	Database Search	IOC, Microbials
112	Motorcycles & Motor Scooters-Repair	3 YR	Database Search	IOC, VOC, SOC
113	Buses-New & Used (Wholesale)	3 YR	Database Search	IOC, VOC, SOC
114	Soil Conditioners (Wholesale)	3 YR	Database Search	IOC, VOC, SOC, Microbials
115	Building Contractors	3 YR	Database Search	IOC, VOC, SOC

SITE #	Source Description[1]	TOT Zone[2] (years)	Source of Information	Potential Contaminants[3]
116	Farming Service	3 YR	Database Search	IOC, VOC, SOC
117	Farming Service	3 YR	Database Search	IOC, VOC, SOC
118, 119	General Contractors	3 YR	Database Search	IOC, VOC, SOC
120	Automobile Parts & Supplies-Retail	3 YR	Database Search	IOC, VOC, SOC
122	Laundries	3 YR	Database Search	IOC, VOC, SOC, Microbials
123	Commercial Printing	3 YR	Database Search	IOC, VOC
124	Race Tracks	3 YR	Database Search	IOC, VOC, SOC
125	Veterinarians	3 YR	Database Search	IOC, Microbials
126	Automobile Repairing & Service	3 YR	Database Search	IOC, VOC, SOC
127	Automobile Dealers-Used Cars	3 YR	Database Search	IOC, VOC, SOC
128	Compost (Manufacturers)	3 YR	Database Search	IOC, Microbials
129	Scrap Metals-Processing/Recycling-	3 YR	Database Search	IOC, VOC, SOC
130	Automobile Repairing & Service	3 YR	Database Search	IOC, VOC, SOC
131	Automobile Radiator-Repairing	3 YR	Database Search	IOC, VOC, SOC
132	Automobile Parts-Used & Rebuilt	3 YR	Database Search	IOC, VOC, SOC
133	Tire-Dealers-Retail	3 YR	Database Search	VOC, SOC
134	Home Builders	3 YR	Database Search	IOC, VOC, SOC
135	Automobile Parts & Supplies-Retail	3 YR	Database Search	IOC, VOC, SOC
136	Building Contractors	3 YR	Database Search	IOC, VOC, SOC
137	State Government-National Security	3 YR	Database Search	IOC, VOC, SOC
138	Automobile Repairing & Service	3 YR	Database Search	IOC, VOC, SOC
139	Rental Service-Stores & Yards	3 YR	Database Search	IOC, VOC, SOC
140	Automobile Body-Repairing & Painting	3 YR	Database Search	IOC, VOC, SOC
141	Newspapers (Publishers)	3 YR	Database Search	IOC, VOC
142	Storage-Household & Commercial	3 YR	Database Search	IOC, VOC, SOC
143	Laboratories-Testing	3 YR	Database Search	IOC, VOC, SOC, Microbials
144	Buses-Charter & Rental	3 YR	Database Search	VOC, SOC
146	Painters	3 YR	Database Search	IOC, VOC, SOC
147	Dairies	3 YR	Database Search	IOC, Microbials
148	Automobile Repairing & Service	3 YR	Database Search	IOC, VOC, SOC
149	Trucking-Motor Freight	3 YR	Database Search	IOC, VOC, SOC
150	Photographers-Portrait	3 YR	Database Search	IOC, VOC
151	Livestock Auction Markets	3 YR	Database Search	IOC, Microbials
152	Publishers-Periodical	3 YR	Database Search	IOC, VOC
153	Tree Service	3 YR	Database Search	IOC, VOC, SOC
154	Trucking-Heavy Hauling	3 YR	Database Search	IOC, VOC, SOC
155	General Contractors	3 YR	Database Search	IOC, VOC, SOC
156	Cleaners	3 YR	Database Search	IOC, VOC, SOC, Microbials
157	Engines-Gasoline	3 YR	Database Search	IOC, VOC, SOC
158	Veterinarians	3 YR	Database Search	IOC, Microbials
159	Veterinarians	3 YR	Database Search	IOC, Microbials
160	Well Drilling	3 YR	Database Search	IOC, VOC, SOC
161	Aerial Applicators	3 YR	Database Search	IOC, SOCVOC
162	Farm Supplies (Wholesale)	3 YR	Database Search	IOC, VOC, SOC, Microbials
163	Farm Supplies (Wholesale)	3 YR	Database Search	IOC, VOC, SOC, Microbials
164	State Government-Transportation	3 YR	Database Search	IOC, VOC, SOC
165	Ready-Mixed Concrete-Manufacturers	3 YR	Database Search	IOC, VOC, SOC

SITE #	Source Description[1]	TOT Zone[2] (years)	Source of Information	Potential Contaminants[3]
166	Truck Renting & Leasing	3 YR	Database Search	IOC, VOC, SOC
167	Automobile Parts & Supplies-Retail	3 YR	Database Search	IOC, VOC, SOC
168	Feed-Dealers (Wholesale)	3 YR	Database Search	IOC, SOC, Microbials
169	Farm Equipment-Manufacturers	3 YR	Database Search	IOC, VOC, SOC
170, 171	General Contractors; storage	3 YR	Database Search	IOC, VOC, SOC
172	Dairies	3 YR	Database Search	IOC, Microbials
173	NPDES site; AQUACULTURE discharge	3 YR	Database Search	IOC, Microbials
174	NPDES site; AQUACULTURE discharge	3 YR	Database Search	IOC, Microbials
175	NPDES site; AQUACULTURE discharge	3 YR	Database Search	IOC, Microbials
176	NPDES site; AQUACULTURE discharge	3 YR	Database Search	IOC, Microbials
177	NPDES site; AQUACULTURE discharge	3 YR	Database Search	IOC, Microbials
178	NPDES site; AQUACULTURE discharge	3 YR	Database Search	IOC, Microbials
179	NPDES site; AQUACULTURE discharge	3 YR	Database Search	IOC, Microbials
180	NPDES site; AQUACULTURE discharge	3 YR	Database Search	IOC, Microbials
181	NPDES site; AQUACULTURE discharge	3 YR	Database Search	IOC, Microbials
182	NPDES site; AQUACULTURE discharge	3 YR	Database Search	IOC, Microbials
183	NPDES site; AQUACULTURE discharge	3 YR	Database Search	IOC, Microbials
184	NPDES site; AQUACULTURE discharge	3 YR	Database Search	IOC, Microbials
185	NPDES site; AQUACULTURE discharge	3 YR	Database Search	IOC, Microbials
186	NPDES site; AQUACULTURE discharge	3 YR	Database Search	IOC, Microbials
187	NPDES site; AQUACULTURE discharge	3 YR	Database Search	IOC, Microbials
188	NPDES site; AQUACULTURE discharge	3 YR	Database Search	IOC, Microbials
189	NPDES site; AQUACULTURE discharge	3 YR	Database Search	IOC, Microbials
190	NPDES site; AQUACULTURE discharge	3 YR	Database Search	IOC, Microbials
191	NPDES site; AQUACULTURE discharge	3 YR	Database Search	IOC, Microbials
192	NPDES site; AQUACULTURE discharge	3 YR	Database Search	IOC, Microbials
193	NPDES site; H2O TREATMENT discharge	3 YR	Database Search	IOC, VOC, SOC, Microbials
194	NPDES site; AQUACULTURE discharge	3 YR	Database Search	IOC, Microbials
195	CERCLA site	3 YR	Database Search	IOC, VOC, SOC
197	CERCLA site	3 YR	Database Search	IOC, VOC, SOC
198	RCRA site	3 YR	Database Search	IOC, VOC, SOC
199	RCRA site	3 YR	Database Search	IOC, VOC, SOC
200	RCRA site	3 YR	Database Search	IOC, VOC, SOC
201	RCRA site	3 YR	Database Search	IOC, VOC, SOC
202	RCRA site	3 YR	Database Search	IOC, VOC, SOC
203	deep injection well; Permanent Abandon	3 YR	Database Search	IOC, VOC, SOC, Microbials
204	deep injection well; Active	3 YR	Database Search	IOC, VOC, SOC, Microbials
205	deep injection well; Active	3 YR	Database Search	IOC, VOC, SOC, Microbials
206	deep injection well; Active	3 YR	Database Search	IOC, VOC, SOC, Microbials
207	deep injection w; Active	3 YR	Database Search	IOC, VOC, SOC, Microbials
208	deep injection w; Active	3 YR	Database Search	IOC, VOC, SOC, Microbials
209	deep injection w; Active	3 YR	Database Search	IOC, VOC, SOC, Microbials
210	deep injection w; Active	3 YR	Database Search	IOC, VOC, SOC, Microbials

SITE #	Source Description[1]	TOT Zone[2] (years)	Source of Information	Potential Contaminants[3]
211	SARA; Telephone communication	3 YR	Database Search	IOC, VOC, SOC
212	SARA site	3 YR	Database Search	IOC, VOC, SOC
213	SARA	3 YR	Database Search	IOC, VOC, SOC
214	SARA; GASOLINE SERVICE STATIONS	3 YR	Database Search	VOC, SOC
215	SARA site; Gasoline Service Stations	3 YR	Database Search	IOC, VOC, SOC
218	SARA; Gasoline Service Stations	3 YR	Database Search	IOC, VOC, SOC
219	SARA	3 YR	Database Search	IOC, VOC, SOC
220	SARA site	3 YR	Database Search	IOC, VOC, SOC
222	SARA	3 YR	Database Search	IOC, VOC, SOC
223	SARA	3 YR	Database Search	IOC, VOC, SOC
224	Recharge; Unused	3 YR	Database Search	IOC, SOC, Microbials
225	Recharge; Unused	3 YR	Database Search	IOC, SOC, Microbials
226	Recharge; Unused	3 YR	Database Search	IOC, SOC, Microbials
227	Recharge; Unused	3 YR	Database Search	IOC, SOC, Microbials
228	WLAP site; municipal	3 YR	Database Search	IOC, Microbials
229	landfill; Municipal, Active	3 YR	Database Search	IOC, VOC, SOC, Microbials
	Union Pacific Railroad	3 YR	Database Search	IOC, VOC, SOC, Microbials
	Interstate 84	3 YR	Database Search	IOC, VOC, SOC, Microbials
	Highway 25	3 YR	Database Search	IOC, VOC, SOC, Microbials
	Highway 79	3 YR	Database Search	IOC, VOC, SOC, Microbials
	Highway 93	3 YR	Database Search	IOC, VOC, SOC, Microbials
230	Dairy; <=200 cows	6 YR	Database Search	IOC
231	Recharge; Unused	6 YR	Database Search	IOC, SOC, Microbials
232	Recharge; Unused	6 YR	Database Search	IOC, SOC, Microbials
233	Dairy; <=200 cows	10 YR	Database Search	IOC
234	mine; Pumice	10 YR	Database Search	IOC, VOC, SOC

[1] UST = Underground Storage Tank, LUST = Leaking Underground Storage Tank, WLAP = Waste Land Application Site, CERCLA = Comprehensive Environmental Response Compensation and Liability Act, SARA = Superfund Amendments and Reauthorization Act
[2] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[3] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Section 3. Susceptibility Analyses

The springs' susceptibility to contamination were ranked as high, moderate, or low risk according to the following considerations: spring construction, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each spring is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Attachment A contains the susceptibility analysis worksheets. The following summaries describe the rationale for the susceptibility ranking.

System Construction

Spring construction scores are determined by evaluating whether the spring has been constructed according to Idaho Code (IDAPA 58.01.08.04) and if the spring's water is exposed to any potential contaminants from the time it exits the bedrock to when it enters the distribution system. If the spring's intake structure, infiltration gallery, and housing are located and constructed in such a manner as to be permanent and protect it from all potential contaminants, is contained within a fenced area of at least 100 feet in diameter, and is protected from all surface water by diversions, berms, etc., then Idaho Code is being met and the score will be lower. If the spring's water comes in contact with the open atmosphere before it enters the distribution system, it receives a higher score. Likewise, if the spring's water is piped directly from the bedrock to the distribution system or is collected in a protected spring box without any contact to potential surface-related contaminants, the score is lower.

The spring rated high for construction. Water exits the rock forming clear spring, and cascades down the rock where it is collected, piped an 8000 gallon storage tank, and chlorinated. Meticulous chlorination records are kept and levels are checked twice daily. The sanitary setback distance of 100 feet appears to be observed. The high score was received because there is no fence surrounding the 100 foot sanitary setback to protect the spring from animals, etc. and it is unknown if a berm is present (or necessary) to protect the spring's water from surface runoff. In addition, the spring's water contacts the atmosphere before it enters the distribution, creating a potential for contamination by airborne particles.

Potential Contaminant Source and Land Use

The well rated high for IOCs (e.g. arsenic, nitrate), and SOCs (e.g. pesticides), and moderate for VOCs (e.g. petroleum products) and microbial contaminants (e.g. bacteria). The number and location of contaminant sources, as well as the amount of irrigated agricultural land within the delineation, especially within the 0-3 TOT zone, contributed the largest amount of points to the scores. County level nitrogen fertilizer use, county level herbicide use, and total county level agricultural chemical use are rated as high for the wells.

Final Susceptibility Rating

An IOC detection above a drinking water standard MCL, any detection of a VOC or SOC, or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well, despite the land use of the area, because a pathway for contamination already exists. Additionally, the storage or application of any potential contaminants within 50 feet of the wellhead will lead to an automatic high score. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0- to 3-year time-of-travel zone (Zone 1B) and much agricultural land contribute greatly to the overall ranking.

Table 2. Summary of Clear Springs Foods Susceptibility Evaluation

Drinking Water Sources	Susceptibility Scores[1]								
	Potential Contaminant Inventory and Land Use				System Construction	**Final Susceptibility Ranking**			
	IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Clear Spring	H	M	H	M	H	H	M	H	H

[1]H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Susceptibility Summary

In terms of total susceptibility, Clear Spring rated high for IOCs, SOCs, and for microbials, and moderate for VOCs. System construction rated high, and land use rated high for IOCs and SOCs, and moderate for VOCs and microbial contaminants. The largest influences upon overall scores were the number of potential contaminants located within the three year TOT zone (Table 1 and Figure 2) and the fact that water destined for the water system's distribution system contacts the atmosphere between the ground and the collection pipe.

No VOCs or SOCs have ever been detected in the spring. Trace amounts of the IOCs chromium, sodium, fluoride, sodium, and nitrate have been detected, but concentrations have been significantly below MCLs. For example, despite the spring and its delineation existing within a county with high nitrogen fertilizer use, high herbicide use, and high agricultural chemical use, nitrate concentrations have not been detected higher than 2.39 mg/L, well below the MCL of 10 mg/L as set by EPA. Repeat detections of total coliform have occurred once (January 1997) in the distribution system.

Section 4. Options for Drinking Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. An effective drinking water protection program is tailored to the particular local drinking water protection area. A community with a fully developed drinking water protection program will incorporate many strategies, be they regulatory in nature (e.g. zoning, permitting) or non-regulatory in nature (e.g. good housekeeping, public education, specific best management practices). For Clear Springs Foods, drinking water protection activities should first focus on maintaining the requirements of the sanitary survey. Any spills from the potential contaminant sources listed in Table 1 of this report should be carefully monitored, as should any future development in the delineated areas. Other practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water areas should be implemented. No chemicals should be stored or applied within the 100-foot radius of the wellhead. As most of the designated areas are outside the direct jurisdiction of the Clear Springs Foods, partnerships with state and local agencies and industry groups should be established and are critical to success.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineation is near urban and residential land use areas. Public education topics could include proper lawn and garden care practices, household hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the U.S. Environmental Protection Agency. There are transportation corridors near the delineation, therefore the Department of Transportation should be involved in protection activities. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

A system must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (e.g. zoning, permitting) or non-regulatory in nature (e.g. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Twin Falls Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

Assistance

Public water suppliers and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Twin Falls Regional DEQ Office	(208) 736-2190
State DEQ Office	(208) 373-0502

Website: http://www.deq.state.id.us

Water suppliers serving fewer than 10,000 persons may contact Ms. Melinda Harper (mlharper@idahoruralwater.com), Idaho Rural Water Association, at 1-208-343-7001 for assistance with drinking water protection strategies.

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund≅ is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

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Attachment A

Clear Springs Foods Susceptibility Analysis Worksheet

The final scores for the susceptibility analysis were determined using the following formulas:

1) IOC/VOC/SOC Final Score = (Potential Contaminant/Land Use X 0.6) + System Construction Score.

2) Microbial Final Score = (Potential Contaminant/Land Use x 1.125) + System Construction Score.

Spring Source Final Susceptibility Scoring

0-7 = Low Susceptibility

8-15 = Moderate Susceptibility

16-21 = High Susceptibility

Spring Water Susceptibility Report Public Water System Name: Clear Springs Foods Public Water System Number 5240007
Clear Spring

1. System Construction			SCORE
Intake structure and area constructed to meet Idaho Code		NO	1
Does the water enter the distribution system without contacting the atmosphere YES = lower score, NO = higher score		NO	2
	Total System Construction Score		3

2. Potential Contaminant / Land Use - ZONE 1A			IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	RANGELAND, WOODLAND, BASALT		0	0	0	0
Farm chemical use high	YES		2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO		NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A			2	0	2	0
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)	YES		172	141	144	96
(Score = # Sources X 2) 8 Points Maximum			8	8	8	8
Sources of Class II or III leacheable contaminants or	YES		56	52	52	
4 Points Maximum			4	4	4	
Zone 1B contains or intercepts a Group 1 Area	NO		0	0	0	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land		4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B			16	16	16	12
Potential Contaminant / Land Use - ZONE II						
Contaminant Sources Present	YES		2	0	2	
Sources of Class II or III leacheable contaminants or	NO		0	0	0	
Land Use Zone II	Less than 25% Agricultural Land		0	0	0	
Potential Contaminant Source / Land Use Score - Zone II			2	0	2	0
Potential Contaminant / Land Use - ZONE III						
Contaminant Source Present	YES		1	1	1	
Sources of Class II or III leacheable contaminants or	NO		0	0	0	
Is there irrigated agricultural lands that occupy > 50% of	NO		0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III			1	1	1	0
Cumulative Potential Contaminant / Land Use Score			21	17	21	12
4. Final Susceptibility Source Score			16	13	16	17
5. Final Well Ranking			High	Moderate	High	High